Proposal Panel 1 : 2210827

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Agency Name: National Science Foundation

Agency Tracking Number: **2210827**

Panel Summary

Panel Summary

Brief Overview of Project

The proposal aims to develop theory and methods for high dimensional Bayesian inference. Specifically, theoretical results for variational inference will be developed with robust, yet efficient Bayesian methods for frequentist FDR control along with prediction sets.

Intellectual merit

Strengths:

1) The PI has a strong and relevant track record, especially for junior researcher, and is uniquely qualified to take on the proposed research.
2) The proposal is well written: The introduction, background, preliminary results, and research plan are well organized and generally detailed.
3) The focus on methods for FDR control and prediction sets that are optimal under a certain model, yet valid in terms of frequentist FDR control even when a model is misspecified, is creative and potentially transformative.
4) This is an important area and the proposed research is timely.

Weaknesses:

1) Some stylized assumptions are made at times, though these may be necessary given the technical nature of the research.
2) Some details are missing at times, though this may be anticipated given the ambition of the proposal and page limitation of the proposal.

Broader impacts

Strengths:

1) The research will be incorporated in the PI's graduate level theoretical statistics and statistical learning courses.
2) The PI will organize workshops and invited sessions to broadly disseminate results.
3) The PI plans to incorporate graduate and undergraduate students in the research.
4) The research will have a significant impact in other areas like machine learning.

Weaknesses:

1) It may be optimistic to involve undergraduates in the proposed research given its theoretical nature.

Results of Prior NSF support: The PI is a young investigator with no prior NSF support.

Data Management plan: Adequate

Post-doctoral Mentoring Plan: Not applicable

RECOMMENDATION

Overall the panel felt that the proposal was well thought out, creative and transformative, and thought that the PI will likely be successful. The research will advance Bayesian high dimensional inference and consequently impact other areas.

The panel placed this proposal in the category: Highly Recommended for Funding.

The summary was read by/to the panel, and the panel concurred that the summary accurately reflects the panel discussion.

PANEL RECOMMENDATION: Highly Recommended for Funding